

B.COM (BUSINESS DATA ANALYTICS)

Semester V								
Sl. No.	Course Code	Title of the Course	Category of Courses	Teaching Hours/ Week (L+T+)	SEE	CIE	Total Marks	Credits
37	COM 5.1	Financial Management	DSC-13	3+0+2	60	40	100	4
38	COM 5.2	Income Tax Law and Practice-I	DSC-14	3+0+2	60	40	100	4
39	COM 5.3	Financial markets and services	DSC-15	4+0+0	60	40	100	4
40	COM 5.4	Business Data Analytics	DSC-16	3+0+2	60	40	100	3
41	COM 5.5	Introduction to 'R'	DSC-17	3+0+2	60	40	100	3
42	COM 5.6	C Programming	Vocational-1	3+0+2	60	40	100	4
43	COM 5.7	Cyber Security OR Employability Skills	SEC - 5B	2+0+2	60	40	100	3
Sub -Total (E)					420	280	700	25

Name of the Program: Bachelor of Commerce (Data Analytics) Course Code: B.Com. BDA .5.1 Name of the Course: Financial Management		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
4 Credits	4 Hrs.	56 Hrs.
Pedagogy: Classrooms lecture, Case studies, Tutorial Classes, Group discussion, Seminar & fieldwork etc.,		
Course Outcomes: On successful completion of the course, the students' will be able to <ol style="list-style-type: none"> Understand the role of financial managers effectively in an organization. Apply the compounding & discounting techniques for time value of money. Take investment decisions with appropriate capital budgeting techniques for investment proposals. Understand the factors influencing the capital structure of an organization. Estimate the working capital requirement for the smooth running of the business 		
Syllabus:		Hours
Module No. 1: Introduction to Financial Management		12
Introduction –Meaning of Finance, Finance Function, Objectives of Finance function, Organization of Finance function -Meaning and definition of Financial Management; Goals of Financial Management, Scope of Financial Management, Functions of Financial Management, Role of Finance Manager in India. Financial planning-- Meaning –Need – Importance -Steps in financial Planning – Principles of a sound financial plan and Factors affecting financial plan.		
Module No. 2: Time Value of Money		10
Introduction – Meaning of time value of money-time preference of money- Techniques of timevalue of money: Compounding Technique-Future value of Single flow, Multiple flow and Annuity -Discounting Technique-Present value of Single flow, Multiple flow – and Annuity. Doubling Period- Rule 69 and 72.		
Module No. 3: Financing Decision		14
Introduction-Meaning and Definition of Capital Structure, Factors determining the Capital Structure, Concept of Optimum Capital Structure, EBIT-EPS Analysis- Problems. Leverages: Meaning and Definition, Types of Leverages- Operating Leverage, Financial Leverage and Combined Leverages – Theory and Problems.		
Module No. 4: Investment Decision		12
Introduction-Meaning and Definition of Capital Budgeting, Features, Significance – Steps in Capital Budgeting Process. Techniques of Capital budgeting: Traditional Methods – Pay Back Period, and Accounting Rate of Return – DCF Methods: Net Present Value Internal Rate of Return and Profitability Index - Theory and Problems.		
Module 5: Working Capital Management		12
Introduction- Meaning and Definition, types of working capital, Operating cycle, Determinants of working capital needs – Estimation of working capital requirements. dangers of excess and inadequate working capital, Merits of adequate working capital, Sources of working capital. Cash Management, Receivable Management and Inventory Management (Concepts only).		

Skill Development Activities:

1. Prepare the list of Functions of Finance Manager.
2. As a finance manager of a company, design an appropriate Capital Structure.
3. Evaluate a capital investment proposal by using NPV method with imaginary figures.
4. Calculate EBIT and EPS with imaginary figures.
5. Calculate PBP with imaginary figures of Uneven Cash inflow for three years.

Books for reference:

- IM Pandey, Financial management, Vikas publications, New Delhi.
- Abrish Guptha, Financial management, Pearson.
- Khan & Jain, Basic Financial Management, TMH, New Delhi.
- S N Maheshwari, Principles of Financial Management, Sulthan Chand & Sons, New Delhi.
- Chandra & Chandra D Bose, Fundamentals of Financial Management, PHI, New Delhi.
- Ravi M Kishore, Financial Management, Taxman Publications
- Prasanna Chandra, Financial Management, Theory and Practice, Tata McGraw Hill

Name of the Program: Bachelor of Commerce (Data Analytics) Course Code: B.Com. BDA .5.2 Name of the Course: Income Tax Law and Practice – I		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
4 Credits	4 Hrs.	56 Hrs.
Pedagogy: Classrooms lecture, Case studies, Tutorial classes, Group discussions, Seminar & fieldwork etc.,		
Course Outcomes: On successful completion of the course, the students will be able to		
a) Understand the basic concepts of Income Tax as per Income Tax Act 1961. b) Understand the provisions for determining the residential status of an Individual. c) Comprehend the meaning of Salary, Perquisites, allowances and Profit in lieu of salary, and various retirement benefits. d) Compute the income of house property for different categories of house property. e) Comprehend the assessment procedure and to know the power of income tax authorities.		
Syllabus:		Hours
Module No. 1: Basic Concepts of Income Tax		08
Introduction –Meaning of tax-, types of taxes and canons of taxation, Important definitions, assessment year, previous year including exceptions, assesses, person, income, casual income, Gross total income, Total income, Agricultural income, Tax Rates (Old and New Regimes). Exempted incomes of individuals under section 10.		
Module No. 2: Assessment Procedure and Income Tax Authorities		08
Meaning of Assessment - Types of Assessment– Regular Assessment- Self Assessment – Best Judgement Assessment- Summary Assessment – Scrutiny Assessment – Income Escaping Assessment - Permanent Account Number -Meaning, Procedure for obtaining PAN and transactions were quoting of PAN is compulsory. Income Tax Authorities their Powers and functions. CBDT, CIT and AO.		
Module No. 3: Residential Status and Incidence of Tax		10
Introduction – Residential status of an individual. Determination of residential status of an individual. Incidence of tax or Scope of Total income. Problems on computation of Gross total Income of an individual (excluding deductions U/S 80)		
Module No. 4: Income from Salary		18
Introduction - Meaning of Salary -Basis of charge Definitions–Salary, allowances, Perquisites and profits in lieu of salary - Provident Fund - Retirement Benefits – Gratuity, pension and Leave salary. Deductions U/S 16 and Problems on Computation of Taxable Salary.		
Module No. 5: Income from House Property		12
Introduction - Basis of charge - Deemed owners -House property incomes exempt from tax, Vacancy allowance and unrealized rent. Annual Value –Determination of Annual Value- Deductions U/S 24 from Net Annual Value - Problems on Computation of Income from House Property.		

Skill Developments Activities:

1. Prepare slab rates chart for different Individual assesses (Old Regime).
2. List out any 6 Incomes exempt from tax under section 10 of an Individual.
3. Draw an organization chart of Income Tax Authorities.
4. Prepare the chart of perquisites received by an employee in an organization.
5. Prepare the chart of Computation of Income under House Property.

Books for Reference:

- Mehrotra H.C and T.S. Goyal, Direct taxes, Sahithya Bhavan Publication, Agra.
- Vinod K. Singhanian, Direct Taxes, Taxman Publication Private Ltd, New Delhi.
- Gaur and Narang, Law and practice of Income Tax, Kalyani Publications, Ludhiana.
- Bhagawathi Prasad, Direct Taxes.

Name of the Programme: Bachelor of Commerce (Data Analytics)		
Course Code: B.Com. BDA .5.3		
Name of the Course: Financial Markets & Services		
Course Credits	No. of Hours per Week	Total No of Teaching Hours
4 Credits	4 Hrs.	56 Hrs.
Pedagogy: Classrooms lecture, Case studies, Tutorial classes, Group discussions, Seminar & field work etc.,		
Course Outcomes: On successful completion of the course, the students will be able to:		
a) Understand the Overview of Indian financial system.		
b) Understand the different types of financial institutions and their role.		
c) Understand concept of financial services, types and functions.		
d) Understand the different types of financial Instruments and its features.		
e) Understand the different types of financial market and its role.		
Syllabus		Hours
Module No. 1: Overview of Indian Financial System		08
Introduction to Financial System – Features, Constituents of Financial System; Financial Institutions; Financial Services; Financial Markets and Financial Instruments, Financial Regulators (a brief profile of RBI, SEBI, IRDAI).		
Module No. 2: Financial Institutions		14
Meaning, Need for Financial Institutions; Banks – Meaning, Types of Banks, Role of Banks, Insurance Companies – Meaning, Types of Insurance, Role of Insurance; NBFC’S – Meaning, Types of NBFC’s , Role of NBFC’s, EXIM Bank –Meaning, Role and Objectives; Asset Management Companies (AMC) – Meaning, Role of AMC in Mutual Funds.		
Module No. 3: Financial Services		12
Financial Services – Meaning, Objectives, Functions, Characteristics; Types of Financial Services - Merchant Banking – Functions and Operations, Leasing, Factoring, Bill Discounting, Credit Card, Debit Card, Loans and Advances –Meaning and Types, Venture Capital & Credit Rating.		
Module No. 4: Financial Markets		12
Meaning and Definition, Types of Financial Markets, Role and Functions of Financial Markets, Constituents of Financial Markets- Money Market, Capital Market – Primary and Secondary Market, Methods of Issue of shares in the primary market, -Stock Exchange – Role and Function of Stock Exchange.		
Module No. 5: Financial Instruments		10
Meaning, Types of Instruments-Money Market Instruments-Commercial Paper, CD’s Treasury Bills, Promissory Notes, Bills of Exchange, Money at Call and Short Notice; Capital Market and Instruments- Equity Shares, Preference Shares, Debenture/ Bonds, Public Deposits.		

Skill Development Activities:

1. Prepare a List of Private Banks in India
2. Draft a specimen of Bills of Exchange with imaginary content
3. Prepare a List of Fund Based and Fee-Based Financial Services.
4. Draft a Chart of the Financial Market

Books for References:

- L.M. Bhole, Financial Institutions & Markets, McGraw Hill
- Khan, M.Y, Indian Financial System, McGraw Hill
- Sharma, Meera, Management of Financial Institutions, Eastern Economy Edition
- Bhole and Mahakud, Financial Institutions and Markets – Structure, Growth and Innovations, McGraw Hill
- Guruswamy, S., Financial Services and System, McGraw Hill
- Edminister. R.O, Financial Institutions, Markets & Management, McGraw Hill
- Khan. M.Y, Indian Financial System, Vikas Pub. House
- H.R Machiraju, Indian Financial System, Vikas Pub. House
- E.Gorden & K. Nataraj, Financial Markets and Services, HPH

Name of the Program: Bachelor of Commerce (Data Analytics) Course Code: B.Com. BDA .5.4 Name of the Course: Business Data Analytics		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
3 Credits	4 Hrs.	56 Hrs.
Pedagogy: Classrooms lecture, Case studies, Group discussions, Seminar & field worketc.,		
Course Outcomes: On successful completion of the course, the students' will be able to a) Differentiate between the four main types of analytics: Descriptive, Diagnostic, Predictive, and Prescriptive. b) Handle the Data in R studio software c) Perform the statistical analysis using R software d) Perform the predictive modelling using JASP software e) Define the prescriptive analytics		
Syllabus:		Hours
Module No. 1: Introduction to Business Analytics		10
Definition and importance of business analytics, Types of analytics: Descriptive, Diagnostic, Predictive, Prescriptive, the analytics process model, role of data in business decision making.		
Module No. 2: Data Management and Preprocessing		10
Importance of data quality, Data sourcing and collection techniques, Data cleaning and preprocessing, handling missing data, Transformation and normalization using Excel and R Software, Introduction to data warehousing (Concept Only)		
Module No. 3: Statistical Analysis and Visualization		12
Descriptive statistics in business analytics, Probability and probability distributions, Hypothesis testing and inference, Correlation and regression analysis using R software. Introduction to data visualization, Visualization tools and best practices using Power BI software.		
Module No. 4: Predictive Modeling and Machine Learning		12
Introduction to predictive modelling, Linear regression and logistic regression, Classification techniques: Decision Trees, Random Forests, Naïve Bayes, etc., using JASP and R software. Clustering and segmentation, Basics of neural networks and deep learning (Theory only), Model validation and evaluation metrics using Python software.		
Module 5: Prescriptive Analytics and Decision Optimization		12
Introduction to prescriptive analytics, Linear and integer programming, Simulation and risk analysis (Theory only), Decision analysis and decision trees using R software, Multi-criteria decision-making, Applications of prescriptive analytics in business contexts (Theory Only)		

Skill Development Activities:

1. Write the different types of analytics
2. Write the steps in data cleaning using Excel and R
3. Write the different types of charts available in Power BI
4. Differentiate between Neural Network and Deep Learning
5. Write the codes for Decision tree in R studio

Books for Reference:

- Data Science for Business" by Foster Provost and Tom Fawcett
- Data Wrangling with Python" by Jacqueline Kazil and Katharine Jarmul
- Business Analytics: Data Analysis & Decision Making" by S. Christian Albright and Wayne L. Winston
- Spreadsheet Modeling and Decision Analysis" by Cliff Ragsdale
- Practical Statistics for Data Scientists" by Peter Bruce and Andrew Bruce
- Storytelling with Data" by Cole Nussbaumer Knaflic
- Pattern Recognition and Machine Learning" by Christopher M. Bishop
- An Introduction to Statistical Learning" by Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani

Name of the Program: Bachelor of Commerce (Data Analytics)		
Course Code: B.Com. BDA .5.5		
Name of the Course: Introduction to R		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
3 Credits	4 Hrs.	56 Hrs.
Pedagogy: Classroom lectures, Case studies, Tutorial Classes, Group discussions, Seminar & fieldwork etc.,		
Course Outcomes: On successful completion of the course, the students will be able to		
a) Understand the evolution and importance of the R programming language in Data Analytics.		
b) Understand and differentiate between various data types and structures in R, including vectors, matrices, lists, data frames, and factors.		
c) Conduct Exploratory Data Analysis (EDA) using R, leveraging descriptive statistics and data visualization techniques with 'ggplot2'.		
d) Understand and apply various probability distributions such as binomial, poisson, and normal distributions.		
e) Grasp fundamental concepts of machine learning and its relevance in business scenarios.		
Syllabus:		Hours
Module No. 1: Introduction to R and Data Analytics		12
Background and Importance of Data Analytics, Definition of Data Analytics, Applications in Commerce and Business, Role of R in Data Analytics. Introduction to the R Programming Language- History and Development of R - Features and Capabilities, Importance in Statistical Analysis. Setting up R and RStudio- Installation Process, Navigating the RStudio Interface, Basic R Commands.		
Module No. 2: Basics of R Programming		08
Data Types and Structures in R- Vectors, Matrices, Lists, Data Frames, Factors. Basic Operations in R- Arithmetic Operations, Logical Operations, Relational Operations, Flow Control Statements- if, else, and else if, for loop, while loop, repeat loop.		
Module No. 3: Data Manipulation and Exploration in R		12
Data Importing and Exporting- Reading Data from CSV, Excel, and Databases. Writing Data to Different Formats, Data Cleaning and Transformation- Handling Missing Values- Data Transformation using dplyr- Aggregating Data. Exploratory Data Analysis (EDA)- Descriptive Statistics - Visualizing Data using ggplot2- Correlation and Covariance.		
Module No. 4: Statistical Analysis in R		12
Basics of Statistical Analysis- Probability Distributions (Binomial, Poisson, Normal)- Hypothesis Testing- Confidence Intervals. Regression Analysis- Simple Linear Regression- Multiple Linear Regression- Assessing Model Fit. Other Advanced Techniques- ANOVA (Analysis of Variance)- Non-parametric Tests- Time Series Analysis (basic introduction)		
Module No. 5: Machine Learning with R		12
Introduction to Machine Learning in R- Basic Concepts and Importance in Business- Simple Algorithms: K-means Clustering, Decision Trees- Introduction to R packages like caret and random Forest.		

Skill Development Activities:

1. Write the steps for the Installation of R studio programs.
2. Write the basics codes for Data frame, Logical operation, relational operational with imaginary data.
3. Write the steps for data cleaning and data transformation using excel.
4. Write the difference between the simple regression and multiple regression.
5. Write the importance of machine learning in business

Books for Reference:

- "R for Data Science" by Hadley Wickham & Garrett Grolemund
- "Data Science for Business" by Foster Provost and Tom Fawcett
- "The Art of R Programming" by Norman Matloff
- "R in Action" by Robert Kabacoff
- "Data Wrangling with R" by Bradley Boehmke
- "Practical Statistics for Data Scientists" by Peter Bruce & Andrew Bruce
- "Statistical Analysis with R For Dummies" by Joseph Schmuller
- "Machine Learning with R" by Brett Lantz
- "Introduction to Statistical Learning" by Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani

Name of the Program: Bachelor of Commerce (Data Analytics) Course Code: B.Com. BDA 5.6 (Vocational Course-1) Name of the Course: Fundamentals of C Programming		
Course Credits	No. of Hours per Week	Total No. of Teaching Hours
4 Credits	4 Hrs.	56 Hrs.
Pedagogy: Classroom lectures, Case studies, Tutorial classes, Group discussions, Seminar & fieldwork etc.,		
Course Outcomes: On successful completion of the course, the students' will be able to		
a) Understand the foundational concepts of C programming. b) Develop, compile, and execute basic C programs. c) Utilize data structures effectively for data storage and retrieval. d) Implement file operations for data analytics applications. e) Apply C programming skills to basic data analytics tasks.		
Syllabus:		Hours
Module No. 1: Introduction to C Programming		10
Introduction to Programming- What is programming? -Role of programming in data analytics-Difference between compiled and interpreted languages. Introduction to C Language-History and importance of C- Structure of a C program-Compilation and execution process. Basic I/O Operations- printf() and scanf() functions, Reading and displaying data.		
Module No. 2: Data Types and Operators		10
Data Types -Basic data types: int, float, char, double-Derived data types: arrays, structures, unions, pointers. Variables and Constants-Declaration and initialization-Scope and lifetime. Operators-Arithmetic operators-Relational operators-Logical operators-Assignment operators-Bitwise operators-Conditional (ternary) operators.		
Module No. 3: Control Structures and Functions		10
Control Structures-Decision-making statements: if, if-else, switch. Looping statements: for, while, do-while. Jump statements: break, continue, goto. Functions-Introduction to functions-Types of functions: standard library and user-defined functions- Function declaration, definition, and call, Scope and lifetime of function variables, Recursion.		
Module No. 4: Data Structures in C		10
Arrays- Introduction to arrays, Types of arrays: single-dimensional and multi-dimensional-Operations on arrays: insertion, deletion, traversal. Strings Introduction to strings, String operations: length, compare, concatenate, copy. Pointers-Introduction to pointers, Pointer arithmetic, Pointers with arrays, strings, and functions. Structures and Unions-Defining structures and unions, Accessing members		
Module No. 5: File Operations and Applications in Data Analytics		20
File Handling-Introduction to files-Types of files: text and binary-File operations: open, close, read, write, seek. Applications in Data Analytics-Basic data preprocessing using C- Data visualization basics-Introduction to searching and sorting algorithms, File-based data analytics: reading datasets, basic statistical calculations.		

Skill Development activities:

1. Write the basic data types
2. Explain the various types of functions in C programme
3. List out the different types of arrays
4. Write a note on the searching and sorting algorithm
5. Explain string operations

Books for Reference:

- "The C Programming Language" by Brian W. Kernighan and Dennis M. Ritchie
- "C: The Complete Reference" by Herbert Schildt
- "Data Analysis with C" by Tony Fischetti
- "Operating System Concepts" by Abraham Silberschatz, Peter B. Galvin, and Greg Gagne
- "Introduction to Information Systems: Supporting and Transforming Business" by R. Kelly Rainer & Brad Prince
- "Database System Concepts" by Abraham Silberschatz, Henry F. Korth, and S. Sudarshan
- "C Programming Absolute Beginner's Guide (3rd Edition)" by Greg Perry and Dean Miller
- "Programming in ANSI C" by E. Balagurusamy
- "C Programming for the Absolute Beginner" by Michael Vine
- "Pointers in C: A Hands on Approach" by Hrishikesh Dewan & Naveen Toppo.